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**From:** Fidei, David  
**Sent:** Monday, August 14, 2006 10:56 AM  
**To:** Gravini, Steve  
**Subject:** FW: Litigation search results - 09/767834

## FYI - for Reissue 10/060204

-----Original Message-----

**From:** Catlin, Karen (ASRC)  
**Sent:** Friday, August 11, 2006 1:41 PM  
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**Subject:** Litigation search results - 09/767834

Good afternoon -

The visual representation and results of the litigation search you requested for US Patent No. 6,332,280 are attached.  
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Karen

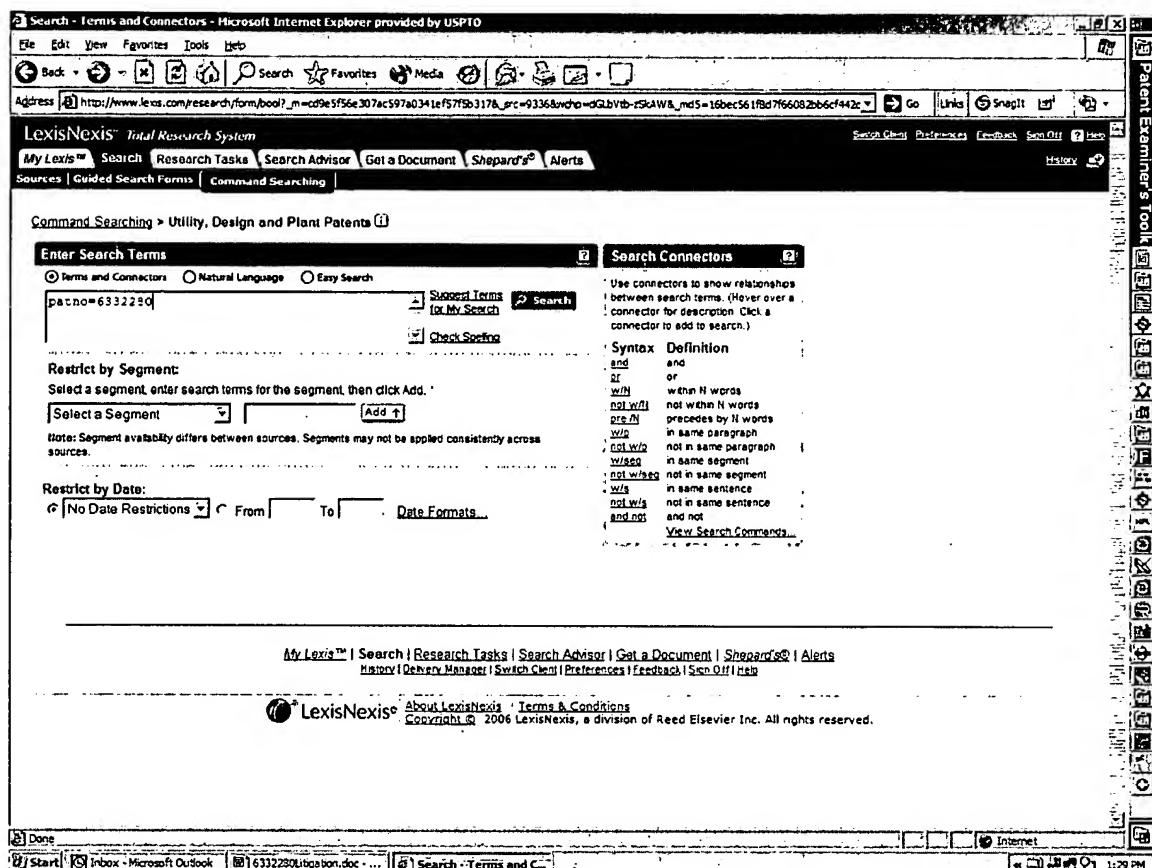


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Pat. No. 6332280 (Copy w/ Cite)

Source: Command Searching - Utility, Design and Plant Patents [1]

Terms: patno=6332280 [Edit Search] [Suggest Terms for My Search]

Pages: 21

767834 (09) 6332280 December 25, 2001

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

6332280

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December 25, 2001

Vacuum processing apparatus

**REISSUE:** February 1, 2002 - Reissue Application filed Ex. Gp.: 3749; Re. S.N. 10/060,204 (O.G. June 4, 2002)

**INVENTOR:** Kato, Shigekazu - Kudamatsu, Japan (JP); Nishihata, Kouji - Tokuyama, Japan (JP); Tsubone, Tsunehiko - Hikari, Japan (JP); Itou, Atsushi - Kudamatsu, Japan (JP)

**APPL-NO:** 767834 (09)

**FILED-DATE:** January 24, 2001

**GRANTED-DATE:** December 25, 2001

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or	or
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not w/N	not within N words
precedes by N words	
w/p	in same paragraph
not w/p	not in same paragraph
w/s	in same segment
not w/s	not in same segment
w/t	in same sentence
not w/t	not in same sentence
and not	and not

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not w/h	not in same paragraph
w/s	in same segment
not w/s	not in same segment
w/t	in same sentence
not w/t	not in same sentence and not

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<u>pre/n</u>	precedes by N words
<u>w/p</u>	in same paragraph
<u>not w/p</u>	not in same paragraph
<u>w/s</u>	in same segment
<u>not w/s</u>	not in same segment
<u>w/s</u>	in same sentence
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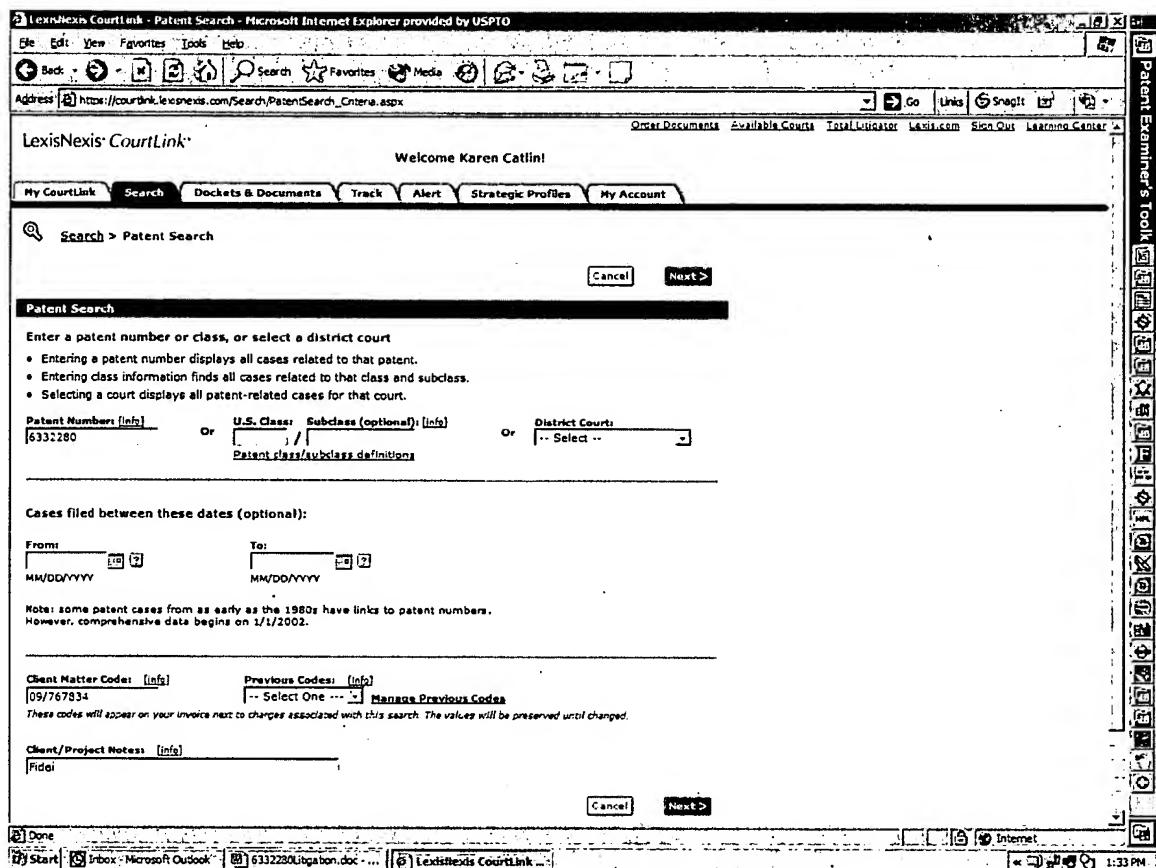
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Utility, Design and Plant Patents

patno=6332280

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UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

**6332280**

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December 25, 2001

Vacuum processing apparatus

**REISSUE:** February 1, 2002 - Reissue Application filed Ex. Gp.: 3749; Re. S.N. 10/060,204 (O.G. June 4, 2002)

**INVENTOR:** Kato, Shigekazu - Kudamatsu, Japan (JP); Nishihata, Kouji - Tokuyama, Japan (JP); Tsubone, Tsunehiko - Hikari, Japan (JP); Itou, Atsushi - Kudamatsu, Japan (JP)

**APPL-NO:** 767834 (09)

**FILED-DATE:** January 24, 2001

**GRANTED-DATE:** December 25, 2001

**ASSIGNEE-AT-ISSUE:** Hitachi, Ltd., Tokyo, Japan (JP), Foreign company or corporation (03)

QUESTEL

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**Patent Number :**  
US2001037585 A1 20011108 [US20010037585]

**Patent Number 2 :**  
US6332280 B2 20011225 [US6332280]

**Title :**  
(A1) Vacuum processing apparatus and operating method therefor

**Patent Assignee :**  
(B2) HITACHI LTD (US)

**Patent Assignee :**  
Hitachi, Ltd., Tokyo [JP]

**Patent Assignee 2 :**  
(B2) HITACHI LTD (US)

**Inventor(s) :**  
(A1) KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)

**Application Nbr :**  
US76783401 20010124 [2001US-0767834]

**Filing Details :**  
Divsn of US461432 19991216 [1999US-0461432]  
Cont. of US177495 19981023 [1998US-0177495]  
Cont. of US061062 19980416 [1998US-0061062]  
Cont. of US882731 19970626 [1997US-0882731]  
Divsn of US593870 19960130 [1996US-0593870]  
Cont. of US443039 19950517 [1995US-0443039]  
Divsn of US302443 19940909 [1994US-0302443]  
Cont. of US096256 19930726 [1993US-0096256]  
Cont. of US751952 19910829 [1991US-0751952]  
Continuation of: US6012235  
Continuation of: US5950330  
Continuation of: US5784799  
Division of: US5661913  
Continuation of: US5553396  
Division of: US5457896  
Continuation of: US5349762  
Continuation of: US5314509

**Priority Details :**  
JP22532190 19900829 [1990JP-0225321]  
US6106298 19980416 [1998US-0061062]  
US9625693 19930726 [1993US-0096256]  
US17749598 19981023 [1998US-0177495]  
US30244394 19940909 [1994US-0302443]  
US44303995 19950517 [1995US-0443039]  
US46143299 19991216 [1999US-0461432]  
US59387096 19960130 [1996US-0593870]  
US75195291 19910829 [1991US-0751952]  
US76783401 20010124 [2001US-0767834]  
US88273197 19970626 [1997US-0882731]

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**Patent Number :**

US2001037585 A1 20011108 [US20010037585]  
US6332280 B2 20011225 [US6332280]

**Application Number :**

US76783401 20010124 [2001US-0767834]

**Action Taken :**

20020604 US/RF-A  
REISSUE APPLICATION FILED  
EFFECTIVE DATE: 20020201

**Update Code :**

2003-22

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**Patent Number :**

6,332,280 A 20011225 [US6332280]

**Patent Assignee :**

Hitachi Ltd JP

**Actions :**

20020201 REISSUE REQUESTED  
ISSUE DATE OF O.G.: 20020604  
REISSUE REQUEST NUMBER: 10/060204  
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3749

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6332280

December 25, 2001

**Vacuum processing apparatus**

REISSUE: February 1, 2002 - Reissue Application filed Ex. Gp.: 3749; Re. S.N. 10/060,204 (O.G. June 4, 2002)

APPL-NO: 767834 (09)

FILED-DATE: January 24, 2001

GRANTED-DATE: December 25, 2001

PRIORITY: August 29, 1990 - 2-225321, Japan (JP)

**ENGLISH-ABST:**

This invention relates to a vacuum processing apparatus having vacuum processing chambers the insides of which must be dry cleaned, and to a method of operating such an apparatus. When the vacuum processing chambers are dry-cleaned, dummy substrates are transferred into the vacuum processing chamber by substrates conveyor means from dummy substrate storage means which is disposed in the air atmosphere together with storage means for storing substrates to be processed, and the inside of the vacuum processing chamber is dry-cleaned by generating a plasma. The dummy substrate is returned to the dummy substrate storage means after dry cleaning is completed. Accordingly, any specific mechanism for only the cleaning purpose is not necessary and the construction of the apparatus can be made simple. Furthermore, the dummy substrates used for dry cleaning and the substrates to be processed do not coexist, contamination of the substrates to be processed due to dust and remaining gas can be prevented and the production yield can be high.

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PN2 - US6332280 B2 20011225 [US6332280]  
TI - (A1) Vacuum processing apparatus and operating method therefor  
PA - (B2) HITACHI LTD (US)  
PA2 - (B2) HITACHI LTD (US)  
IN - (A1) TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP); KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP)  
AP - US76783401 20010124 [2001US-0767834]  
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EC - B41J-002/05D  
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US5970908; US6103055; EP20246453; EP20381338; JP5729577;  
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JP1135015; JP1251734; JP1298180; JP1310553; JP261064; JP265252;  
JP294647; JP2106037; JP430549; WO8707309

R.P.H. Chang, "Multipurpose plasma reactor for materials research and processing", J. Vac. Sci. Technol., vol. 14, No. 1, Jan./Feb. 1977, pp. 278-280.

Semiconductor Equipment Association of Japan, "Terminological Dictionary of Semiconductor Equipment", front, table, p. 183, back, Nov. 20, 1987.

Semiconductor Equipment Association of Japan, "Semiconductor News", vol. 4, pp. 38-43, Apr. 10, 1987 (w/translation).

**STG** - (A1) Utility Patent Application published on or after January 2, 2001  
**STG2** - (B2) U.S. Patent (with pre-grant pub.) after Jan. 2, 2001

**AB** - This invention relates to a vacuum processing apparatus having vacuum processing chambers the insides of which must be dry cleaned, and to a method of operating such an apparatus. When the vacuum processing chambers are dry-cleaned, dummy substrates are transferred into the vacuum processing chamber by substrates conveyor means from dummy substrate storage means which is disposed in the air atmosphere together with storage means for storing substrates to be processed, and the inside of the vacuum processing chamber is dry-cleaned by generating a plasma. The dummy substrate is returned to the dummy substrate storage means after dry cleaning is completed. Accordingly, any specific mechanism for only the cleaning purpose is not necessary and the construction of the apparatus can be made simple. Furthermore, the dummy substrates used for dry cleaning and the substrates to be processed do not coexist, contamination of the substrates to be processed due to dust and remaining gas can be prevented and the production yield can be high.

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**DT** - US-P  
**ACT** - 20010124 US/AE-A  
APPLICATION DATA (PATENT)  
US 767834/01 20010124 [2001US-0767834]

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20020201  
**UP** - 2002-24

2 / 2 **LGST** - @LEGSTAT  
**PN** - US 2001037585 [US20010037585]  
**AP** - US 767834/01 20010124 [2001US-0767834]

DT - US-P  
ACT - 20010124 US/AE-A  
APPLICATION DATA (PATENT)  
US 767834/01 20010124 [2001US-0767834]

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PN - 6,332,280 A 20011225 [US6332280]  
PA - Hitachi Ltd JP  
ACT - 20020201 REISSUE REQUESTED  
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Basic Patent (No,Kind,Date): EP 475604 A1 19920318 <No. of Patents: 080>

PATENT FAMILY:

GERMANY (DE)

Patent (No,Kind,Date): DE 69128861 C0 19980312  
VAKUUMSBEHANDLUNGSVORRICHTUNG UND REINIGUNGSVERFAHREN DAFUER (German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829  
Applie (No,Kind,Date): DE 69128861 A 19910819  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: German  
Patent (No,Kind,Date): DE 69128861 T2 19981008  
VAKUUMSBEHANDLUNGSVORRICHTUNG UND REINIGUNGSVERFAHREN DAFUER (German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829  
Applie (No,Kind,Date): DE 69128861 A 19910819  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: German

EUROPEAN PATENT OFFICE (EP)

Patent (No,Kind,Date): EP 475604 A1 19920318  
VACUUM PROCESSING APPARATUS AND CLEANING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829  
Applie (No,Kind,Date): EP 91307625 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: ; G 92-090205  
Language of Document: English  
Patent (No,Kind,Date): EP 805481 A2 19971105  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 91307625 A3 19910819; JP 90225321 A  
19900829  
Applie (No,Kind,Date): EP 97111628 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00; C23C-014/56  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844; C 97-529274  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 856875 A2 19980805

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English; French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; JP 90225321 A 19900829  
Applie (No,Kind,Date): EP 98106162 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844; G 98-401136  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 1076354 A2 20010214  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English; French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP); NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3 19910819; JP 90225321 A 19900829  
Applie (No,Kind,Date): EP 2000121402 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 1079418 A2 20010228  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English; French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP); NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3 19910819; JP 90225321 A 19900829  
Applie (No,Kind,Date): EP 2000121401 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844; G 02-107535  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 805481 A3 19980520  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English; French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 91307625 A3 19910819; JP 90225321 A 19900829  
Applie (No,Kind,Date): EP 97111628 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00; C23C-014/56  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 856875 A3 19990428  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English; French; German)

Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; JP 90225321 A  
19900829  
Applic (No,Kind,Date): EP 98106162 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 1076354 A3 20020807  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3  
19910819; JP 90225321 A 19900829  
Applic (No,Kind,Date): EP 2000121402 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 1079418 A3 20020807  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3  
19910819; JP 90225321 A 19900829  
Applic (No,Kind,Date): EP 2000121401 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): EP 475604 B1 19980204  
VACUUM PROCESSING APPARATUS AND CLEANING METHOD THEREFOR (English;  
French; German)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);  
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829  
Applic (No,Kind,Date): EP 91307625 A 19910819  
Designated States: (National) DE; FR; GB  
IPC: \* H01L-021/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English

JAPAN (JP)

Patent (No,Kind,Date): JP 4108531 A2 19920409  
VACUUM TREATMENT APPARATUS (English)  
Patent Assignee: HITACHI LTD  
Author (Inventor): KATO SHIGEKAZU; NISHIHATA KOJI; TSUBONE TSUNEHIKO;

ITO ATSUSHI  
Priority (No,Kind,Date): JP 90225321 A 19900829  
Applic (No,Kind,Date): JP 90225321 A 19900829  
IPC: \* B01J-003/00  
JAPIO Reference No: ; 160351C000155  
Language of Document: Japanese  
Patent (No,Kind,Date): JP 4110169 A2 19920410  
IMAGE RECORDER (English)  
Patent Assignee: CANON KK  
Author (Inventor): SUZUKI AKIO  
Priority (No,Kind,Date): JP 90228396 A 19900831  
Applic (No,Kind,Date): JP 90228396 A 19900831  
IPC: \* B41J-002/365; B41J-002/36  
JAPIO Reference No: ; 160353M000093  
Language of Document: Japanese  
Patent (No,Kind,Date): JP 2644912 B2 19970825  
SHINKUSHORISOCHIOYOBISONONTENHOHO (English)  
Priority (No,Kind,Date): JP 90225321 A 19900829  
Applic (No,Kind,Date): JP 90225321 A 19900829  
IPC: \* B01J-003/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: Japanese  
Patent (No,Kind,Date): JP 2950950 B2 19990920  
Priority (No,Kind,Date): JP 90228396 A 19900831  
Applic (No,Kind,Date): JP 90228396 A 19900831  
IPC: \* B41J-002/01; B41J-002/36  
Derwent WPI Acc No: \* G 94-279094  
JAPIO Reference No: \* 160353M000093  
Language of Document: Japanese  
  
KOREA, REPUBLIC (KR)  
Patent (No,Kind,Date): KR 184682 B1 19990415  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829  
Applic (No,Kind,Date): KR 9114984 A 19910829  
IPC: \* H01L-021/304  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: Korean  
Patent (No,Kind,Date): KR 212819 B1 19990901  
TRANSFERRING SYSTEM AND VACUUM TREATING APPARATUS AND METHOD THEREBY (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): NISHIHATA GOJI (JP); TSUBONE TSUNEHIKO (JP); ITO ATSUSHI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829; KR 9114984 A3 19910829  
Applic (No,Kind,Date): KR 9846757 A 19981102  
IPC: \* H01L-021/304  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: Korean  
Patent (No,Kind,Date): KR 212874 B1 19990901  
TRANSFERRING SYSTEM AND VACUUM TREATING APPARATUS THEREBY (English)  
Patent Assignee: HITACHI LTD (JP)

Author (Inventor): GATO SIGEGATSU (JP); NISHIHATA GOJI (JP); TSUBONE TSUNEHICO (JP); ITO ATSUSI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829; KR 9114984 A3 19910829  
Applc (No,Kind,Date): KR 9846756 A 19981102  
IPC: \* H01L-021/304  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: Korean

UNITED STATES OF AMERICA (US)

Patent (No,Kind,Date): US 5314509 A 19940524  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): JP 90225321 A 19900829  
Applc (No,Kind,Date): US 751951 A 19910829  
National Class: \* 034406000; 034092000; 134902000; 414225000  
IPC: \* B08B-003/00; C23C-016/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English

Patent (No,Kind,Date): US 5343231 A 19940830  
IMAGE RECORDING APPARATUS CAPABLE OF CORRECTING DENSITY UNEVENNESS (English)  
Patent Assignee: CANON KK (JP)  
Author (Inventor): SUZUKI AKIO (JP)  
Priority (No,Kind,Date): US 3992 A 19930115; JP 90228396 A 19900831; US 751952 B1 19910829  
Applc (No,Kind,Date): US 3992 A 19930115  
National Class: \* 347014000; 347015000  
IPC: \* B41J-002/05  
Derwent WPI Acc No: \* G 94-279094; G 94-279094  
JAPIO Reference No: \* 160353M000093  
Language of Document: English

Patent (No,Kind,Date): US 5349762 A 19940927  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 96256 A 19930726; JP 90225321 A 19900829; US 751951 A1 19910829  
Applc (No,Kind,Date): US 96256 A 19930726  
National Class: \* 034406000; 034092000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English

Patent (No,Kind,Date): US 5457896 A 19951017  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 302443 A 19940909; JP 90225321 A 19900829; US 96256 A1 19930726; US 751951 A1 19910829  
Applc (No,Kind,Date): US 302443 A 19940909  
Addnl Info: 5349762 Patented; 5314509 Patented  
National Class: \* 034406000; 034092000

IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 5553396 A 19960910  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 443039 A 19950517; JP 90225321 A 19900829; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 443039 A 19950517  
Addnl Info: 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034406000; 034092000; 414225000; 134902000  
IPC: \* B08B-003/00; C23C-016/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 5661913 A 19970902  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 593870 A 19960130; JP 90225321 A 19900829; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 593870 A 19960130  
Addnl Info: 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034406000; 134902000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 5784799 A 19980728  
VACUUM PROCESSING APPARATUS FOR SUBSTATE WAFERS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 882731 A 19970626; JP 90225321 A 19900829; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 882731 A 19970626  
Addnl Info: 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034092000; 414217000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 5950330 A 19990914  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 61062 A 19980416; JP 90225321 A 19900829; US 882731 A1 19970626; US 593870 A3 19960130; US 443039

A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applc (No,Kind,Date): US 61062 A 19980416  
Addnl Info: 5784799 Patented; 5661913 Patented; 5553396 Patented;  
5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6012235 A 20000111  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 177495 A 19981023; JP 90225321 A 19900829; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applc (No,Kind,Date): US 177495 A 19981023  
Addnl Info: 5784799 Patented; 5661913 Patented; 5553396 Patented;  
5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6044576 A 20000404  
VACUUM PROCESSING AND OPERATING METHOD USING A VACUUM CHAMBER (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 390684 A 19990907; JP 90225321 A 19900829; US 177495 A3 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applc (No,Kind,Date): US 390684 A 19990907  
Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented;  
5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6055740 A 20000502  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 231451 A 19990115; JP 90225321 A 19900829; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applc (No,Kind,Date): US 231451 A 19990115  
Addnl Info: 5784799 Patented; 5661913 Patented; 5553396 Patented;  
5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034092000; 034228000  
IPC: \* F26B-013/30

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6070341 A 20000606  
VACUUM PROCESSING AND OPERATING METHOD WITH WAFERS, SUBSTRATES AND/OR SEMICONDUCTORS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 390681 A 19990907; JP 90225321 A 19900829; US 177495 A3 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 390681 A 19990907  
Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6108929 A 20000829  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 461433 A 19991216; JP 90225321 A 19900829; US 231451 A1 19990115; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 461433 A 19991216  
Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6112431 A 20000905  
VACUUM PROCESSING AND OPERATING METHOD (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 389461 A 19990903; JP 90225321 A 19900829; US 177495 A3 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 389461 A 19990903  
Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English

Patent (No,Kind,Date): US 2001000048 AA 20010322  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 725257 A 20001129; JP 90225321 A  
19900829; US 552572 A1 20000419; US 461432 B3 19991216; US 177495  
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US  
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3  
19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 725257 A 20001129  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010001901 AA 20010531  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 766976 A 20010123; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 766976 A 20010123  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010001902 AA 20010531  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 767837 A 20010124; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 767837 A 20010124  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155

Language of Document: English  
Patent (No,Kind,Date): US 20010002517 AA 20010607  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 766975 A 20010123; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 766975 A 20010123  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010003873 AA 20010621  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781296 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829; US 766587 A 20010123  
Applic (No,Kind,Date): US 781296 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010004554 AA 20010621  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 766587 A 20010123; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 766587 A 20010123  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 438758000; 438907000  
IPC: \* H01L-021/31  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844

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Language of Document: English  
Patent (No,Kind,Date): US 20010004807 AA 20010628  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 780444 A 20010212; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829  
Applic (No,Kind,Date): US 780444 A 20010212  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
National Class: \* 034406000; 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010007175 AA 20010712  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781298 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781298 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
National Class: \* 034417000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010008050 AA 20010719  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781293 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781293 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G

98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010008051 AA 20010719  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781295 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781295 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010008052 AA 20010719  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781297 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 781297 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010009073 AA 20010726  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 766597 A 20010123; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829  
Applic (No,Kind,Date): US 766597 A 20010123  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30; F26B-005/04

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010009074 AA 20010726  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781270 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781270 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30; F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010009075 AA 20010726  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781452 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781452 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30; F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010009076 AA 20010726  
SUBSTRATE CHANGING-OVER MECHANISM IN A VACCUM TANK, COMPRISING (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782194 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829  
Applic (No,Kind,Date): US 782194 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented

National Class: \* 034406000  
IPC: \* F26B-013/30; F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010010126 AA 20010802  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782193 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829  
Applic (No,Kind,Date): US 782193 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010011422 AA 20010809  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781317 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829  
Applic (No,Kind,Date): US 781317 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010011423 AA 20010809  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782197 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829  
Applic (No,Kind,Date): US 782197 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762

Patented  
National Class: \* 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010016990 AA 20010830  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782192 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 782192 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30; F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010020339 AA 20010913  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 780394 A 20010212; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829  
Applic (No,Kind,Date): US 780394 A 20010212  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30; F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010020340 AA 20010913  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782196 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 782196 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;

5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20010037585 AA 20011108  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 767834 A 20010124; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 767834 A 20010124  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000; 034092000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 20020032972 AA 20020321  
SUBSTRATE CHANGING-OVER MECHANISM IN VACUUM TANK (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE  
TSUNEHICO (JP); ITO ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITO ATSUSHI (JP)  
Priority (No,Kind,Date): US 782195 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 782195 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034406000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6263588 BA 20010724  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (US)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 614770 A 20000712; JP 90225321 A  
19900829; US 552572 A3 20000419; US 461432 B3 19991216; US 177495  
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US  
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3  
19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 614770 A 20000712  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;

5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034417000; 034229000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6301801 BA 20011016  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 552572 A 20000419; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829  
Applic (No,Kind,Date): US 552572 A 20000419  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034406000; 034092000; 034228000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6301802 BA 20011016  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (US)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 765379 A 20010122; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829  
Applic (No,Kind,Date): US 765379 A 20010122  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
National Class: \* 034406000; 034417000; 034092000; 034229000; 118729000; 414744100; 414744600; 414939000; 414940000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6330755 BA 20011218  
VACUUM PROCESSING AND OPERATING METHOD (English)  
Patent Assignee: HITACHI LTD (US)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 461432 A 19991216; JP 90225321 A 19900829; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829  
Applic (No,Kind,Date): US 461432 A 19991216  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762

Patented; 5314509 Patented  
National Class: \* 034406000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6330756 BA 20011218  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (US)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 614764 A 20000712; JP 90225321 A  
19900829; US 552572 A3 20000419; US 461432 B3 19991216; US 177495  
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US  
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3  
19940909; US 96256 A1 19930726; US 751951 A1 19910829  
Applic (No,Kind,Date): US 614764 A 20000712  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034406000; 034417000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6446353 BA 20020910  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781270 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781270 A 20010213  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented  
National Class: \* 034092000; 034060000; 034236000; 414217000;  
414222130; 414939000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6463676 BA 20021015  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 780427 A 20010212; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 780427 A 20010212  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented

National Class: \* 034412000; 034092000; 034218000; 134902000;  
414217000

IPC: \* F26B-005/04

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844

JAPIO Reference No: \* 160351C000155

Language of Document: English

Patent (No,Kind,Date): US 6314658 BB 20011113

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)

Patent Assignee: HITACHI LTD (US)

Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): US 725257 A 20001129; JP 90225321 A  
19900829; US 552572 A1 20000419; US 461432 B3 19991216; US 177495  
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US  
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3  
19940909; US 96256 A1 19930726; US 751951 A1 19910829

Applic (No,Kind,Date): US 725257 A 20001129

Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented

National Class: \* 034406000; 034092000; 414225000; 134902000

IPC: \* F26B-005/04; B08B-003/00

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844

JAPIO Reference No: \* 160351C000155

Language of Document: English

Patent (No,Kind,Date): US 6332280 BB 20011225

VACUUM PROCESSING APPARATUS (English)

Patent Assignee: HITACHI LTD (US)

Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): US 767834 A 20010124; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829

Applic (No,Kind,Date): US 767834 A 20010124

Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented

National Class: \* 034217000; 034092000; 034222000; 034225000;  
034236000; 414939000; 414940000; 134902000; 156345000

IPC: \* F26B-019/00

Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844

JAPIO Reference No: \* 160351C000155

Language of Document: English

Patent (No,Kind,Date): US 6339887 BB 20020122

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)

Patent Assignee: HITACHI LTD (JP)

Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): US 767837 A 20010124; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829; US 766587 A3 20010123

Applic (No,Kind,Date): US 767837 A 20010124

Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented

National Class: \* 034406000; 034417000; 034092000; 034229000;  
118729000; 414744600; 414939000; 414940000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6457253 BB 20021001  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781317 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829  
Applic (No,Kind,Date): US 781317 A 20010213  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented; 5314509 Patented  
National Class: \* 034092000; 414217000; 134902000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6460270 BB 20021008  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 780394 A 20010212; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 780394 A 20010212  
Addnl Info: 6330755 20000801 Patented; 6012235 Patented; 5950330  
Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented;  
5457896 Patented; 5349762 Patented  
National Class: \* 034092000; 134902000; 414217000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6463678 BB 20021015  
SUBSTRATE CHANGING-OVER MECHANISM IN A VACCUM TANK (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782194 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829  
Applic (No,Kind,Date): US 782194 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661973 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented; 5314509 Patented  
National Class: \* 034573000; 034526000; 034527000; 034573000;

034209000; 034217000; 414217000; 414940000  
IPC: \* F26B-013/10  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6467186 BB 20021022  
TRANSFERRING DEVICE FOR A VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 766976 A 20010123; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829  
Applic (No,Kind,Date): US 766976 A 20010123  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
National Class: \* 034092000; 043060000; 043236000; 414217000; 414222130; 414939000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
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Patent (No,Kind,Date): US 6467187 BB 20021022  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782192 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 782192 A 20010214  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented  
National Class: \* 034092000; 034060000; 134085000; 134902000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6470596 BB 20021029  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 767837 A 20010124; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 767837 A 20010124  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented

National Class: \* 034406000; 034417000; 034092000; 034229000;  
118729000; 414744600; 414939000; 414940000  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6473989 BB 20021105  
CONVEYING SYSTEM FOR A VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781297 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 781297 A 20010213  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented  
National Class: \* 034092000; 034060000; 034236000; 414217000;  
414222130; 414939000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
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JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6484414 BB 20021126  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781298 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 781298 A 20010213  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented  
National Class: \* 034092000; 034060000; 034236000; 414217000;  
414222130; 414939000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
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JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6484415 BB 20021126  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
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Priority (No,Kind,Date): US 782193 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 782193 A 20010214  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896

Patented; 5349762 Patented  
National Class: \* 034092000; 034060000; 034236000; 414222130;  
414217000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6487791 BB 20021203  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782196 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751951 A1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 782196 A 20010214  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented  
National Class: \* 034217000; 034092000; 034222000; 034225000;  
034236000; 134902000; 414939000; 414940000; 156345000  
IPC: \* F26B-019/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 98-401136; G  
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Language of Document: English  
Patent (No,Kind,Date): US 6487793 BB 20021203  
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 766587 A 20010123; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applic (No,Kind,Date): US 766587 A 20010123  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;  
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented  
National Class: \* 034412000; 034406000; 034418000; 034500000;  
034092000; 034218000; 134902000; 414939000; 414222130  
IPC: \* F26B-005/04  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
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Patent (No,Kind,Date): US 6487794 BB 20021203  
SUBSTRATE CHANGING-OVER MECHANISM IN VACUUM TANK (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782195 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829; US 766587 A3 20010123  
Applic (No,Kind,Date): US 782195 A 20010214  
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;

5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896  
Patented; 5349762 Patented  
National Class: \* 034573000; 034526000; 034527000; 034209000;  
034217000; 414217000; 414939000; 414940000  
IPC: \* F26B-013/10  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
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JAPIO Reference No: \* 160351C000155  
Language of Document: English  
Patent (No,Kind,Date): US 6490810 BB 20021210  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 782197 A 20010214; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applc (No,Kind,Date): US 782197 A 20010214  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034092000; 414225000; 134902000  
IPC: \* F26B-013/30  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
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Patent (No,Kind,Date): US 6499229 BB 20021231  
VACUUM PROCESSING APPARATUS (English)  
Patent Assignee: HITACHI LTD (JP)  
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);  
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)  
Priority (No,Kind,Date): US 781293 A 20010213; JP 90225321 A  
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062  
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US  
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726  
; US 751952 B1 19910829  
Applc (No,Kind,Date): US 781293 A 20010213  
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;  
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762  
Patented  
National Class: \* 034217000; 034092000; 034222000; 034225000;  
034236000; 414939000; 414940000; 134902000; 156345000  
IPC: \* F26B-019/00  
Derwent WPI Acc No: \* C 97-529274; G 92-090205; G 94-279094; G  
98-401136; G 02-107535; G 02-123844  
JAPIO Reference No: \* 160351C000155  
Language of Document: English

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